

IN THE CLAIMS:

The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

1.-3. (Canceled)

4. (Currently Amended) ~~The method according to claim 3, wherein the method optimizes a third parameter used to transform a measured value of the sensor into a position and orientation of the image sensing unit on a world coordinate system using the set first and second parameters, and further comprises: An information processing method for optimizing a third parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit on a world coordinate system, wherein the sensor comprises a transmitter and a receiver, said method comprising the steps of:~~

acquiring the measured value of the sensor when an image of the transmitter of the sensor is captured by the image sensing unit to which the receiver of the sensor is attached, wherein the transmitter of the sensor is an origin of a sensor coordinate system;

calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, by using the measured value of the sensor;

superimposing a virtual image of the transmitter on a captured image on the basis of the calculated first parameter;

inputting a user's instruction associated with an adjustment value of the calculated first parameter, and updating the virtual image in accordance with the adjustment value;

setting a second parameter used to calculate a position and orientation of the transmitter on a world coordinate system in accordance with a user's manual instruction;

acquiring another captured image, obtained by capturing an image of the real space, where a plurality of markers whose known world coordinate positions are laid out, using the image sensing unit and the measured value of the sensor upon capturing the image;

detecting positions of the plurality of markers included in the other captured image; and

optimizing the third parameter using the measured value of the sensor, the positions of the detected markers, [[and]] the world coordinate positions of the detected markers, and the first and the second parameters.

5. (Currently Amended) A program for making a computer implement an information processing method for calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, the sensor comprising a transmitter and a receiver, said program comprising:

code for a step of acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image, the image being captured by the image sensing unit to which the receiver is attached; and

code for a step of calculating the first parameter using the measured value of the sensor;

wherein the transmitter of the sensor is also placed at the origin of a sensor coordinate system

A program, stored in a computer readable storage medium, for implementing an information processing method for optimizing a third parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit on a world coordinate system, wherein the sensor comprises a transmitter and a receiver, the program comprising code for:

acquiring the measured value of the sensor when an image of the transmitter of the sensor is captured by the image sensing unit on which the receiver of the sensor is attached, wherein the transmitter of the sensor is an origin of a sensor coordinate system;

calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, by using the measured value of the sensor;

superimposing a virtual image of the transmitter on a captured image on the basis of the calculated first parameter;

inputting a user's instruction associated with an adjustment value of the calculated first parameter, and updating the virtual image in accordance with the adjustment value;

setting a second parameter used to calculate a position and orientation of the transmitter on a world coordinate system in accordance with a user's manual instruction;

acquiring another captured image, obtained by capturing an image of the real space, where a plurality of markers whose known world coordinate positions are laid out, using the image sensing unit and the measured value of the sensor upon capturing the image;

detecting positions of the plurality of markers included in the other captured image; and

optimizing the third parameter using the measured value of the sensor, the positions of the detected markers, the world coordinate positions of the detected markers, and the first and the second parameters.

6. (Canceled)

7. (Currently Amended) An information processing apparatus for calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image unit, the sensor comprising a transmitter and a receiver, said apparatus comprising:

~~an acquisition unite adapted to acquire the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at our nearly at the center of a captured image, image being captured by the image sensing unit to which the receiver is attached; and~~
~~a calculation unit adapted to calculate the first parameter using the measured value of the sensor;~~

~~wherein the transmitter of the sensor is also placed at the origin of a sensor coordinate system~~

An information processing apparatus for optimizing a third parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit on a world coordinate system, wherein the sensor comprises a transmitter and a receiver, comprising:

an acquiring unit for acquiring the measured value of the sensor when an image of the transmitter of the sensor is captured by the image sensing unit on which the receiver of the sensor is attached, wherein the transmitter of the sensor is an origin of a sensor coordinate system;

a calculating unit for calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, by using the measured value of the sensor;

a superimposing unit for superimposing a virtual image of the transmitter on a captured image on the basis of the calculated first parameter;

an inputting unit for inputting a user's instruction associated with an adjustment value of the calculated first parameter, and updating the virtual image in accordance with the adjustment value;

a setting unit for setting a second parameter used to calculate a position and orientation of the transmitter on a world coordinate system in accordance with a user's manual instruction;

an acquiring unit for acquiring another captured image, obtained by capturing an image of the real space, where a plurality of markers whose known world coordinate positions are laid out, using the image sensing unit and the measured value of the sensor upon capturing the image;

a detecting unit for detecting positions of the plurality of markers included in the other captured image; and

an optimizing unit for optimizing the third parameter using the measured value of the sensor, the positions of the detected markers, the world coordinate positions of the detected markers, and the first and the second parameters.

8.-14. (Canceled)